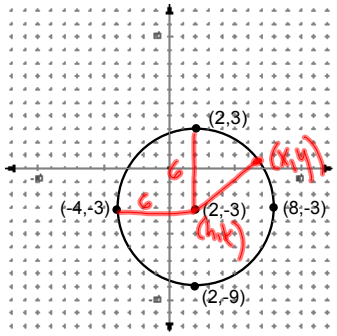
8-3 Circles

Circle--the set of all points, in a plane, a given distance (radius) from a fixed point (center)



$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$r = \sqrt{(x - h)^2 + (y - k)^2}$

Equation of Circle

$r^2 = (x - h)^2 + (y - k)^2$

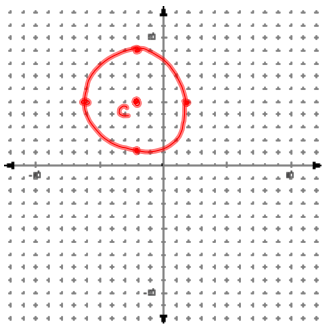
$C(h, k)$

Find the equation of a circle with C(-2, 5) and r = 4.

$r^2 = (x-h)^2 + (y-k)^2$

$16 = (x+2)^2 + (y-5)^2$

Graph it.



Find the center and radius.

$(x-h)^2 + (y-k)^2 = r^2$

1. $x^2 + y^2 - 16 = 0$

$x^2 + y^2 = 16$

$r = 4 \quad C(0, 0)$

Find the center and radius.

2. $x^2 + y^2 + 8y = 0$

$x^2 + y^2 + 8y + 16 = 0 + 16$

$x^2 + (y+4)^2 = 16$

$r = 4 \quad C(0, -4)$

Find the center and radius.

3. $x^2 + y^2 - 4x + 2y - 4 = 0$

$x^2 - 4x + 4 + y^2 + 2y + 1 = 4 + 4 + 1$

$(x-2)^2 + (y+1)^2 = 9$

$C(2, -1)$

$r = 3$

Find the center and radius.

4. $x^2 + y^2 + 3x + 4y = 0$

$x^2+3x+\frac{9}{4}+y^2+4y+4 = 0$ $+\frac{9}{4}$ $+4\ \frac{16}{4}$

$\left(x+\frac{3}{2}\right)^2+(y+2)^2 = \frac{25}{4}$

$r=\frac{5}{2}$ $C\left(-\frac{3}{2}, -2\right)$

General Form

$x^2 + y^2 + ax + by + c = 0$

a, b, c $\in$ Real

Find the equation a circle with C(2 -1) that goes through (5, 3)

$r^2 = (x-h)^2 + (y-k)^2$

$r^2 = (x-2)^2 + (y+1)^2$

Plug in 5,3

$r^2 = (5-2)^2 + (3+1)^2$

$9 + 16$

$r^2 = 25$

$25 = (x-2)^2 + (y+1)^2$

Find the equation a circle with C(4, 3) that goes through (8, 12)

$97 = (x-4)^2 + (y-3)^2$

Find the equation a circle with diameter endpoints (-5, -1) and (-1, -1)

$M\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

$M\left(\frac{-5+1}{2}, \frac{-1+-1}{2}\right)$

Center$(-3, -1)$

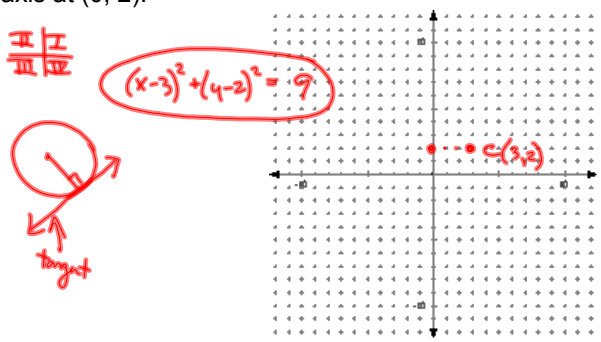
$(x+3)^2 + (y+1)^2 = r^2$

$4 = r^2$

$(x+3)^2 + (y+1)^2 = 4$

Find the equation a circle with diameter endpoints (3, -4) and (7, 2)

Find the equation a circle, whose center is in quadrant I, with a radius of 3 and is tangent to the y-axis at (0, 2).



HW
~~p429-430~~
~~16, 17, 19-21, 24, 27, 33, 34, 39, 43, 47~~

Block day double lesson--Class WORK
p429-430
#s 16, 20, 24, 33, 39, and 43
(do not graph 39 and 43)